

# DECOMETAL® BY FORMICA GROUP TECHNICAL DATA



## RECOMMENDED APPLICATION

Formica DecoMetal® laminate is real metal foil laminated to a phenolic core to combine the practicality of a high pressure laminate with the beauty of real metal. Metal laminate is suitable for interior light-duty horizontal or vertical applications such as furniture, exhibits, accents, etc., where the bold look and design of metal are required.

Formica DecoMetal solid metals and solid metal strips are solid aluminum sheets with polished-anodized or brushed lacquer finished surfaces. They are intended for vertical and light-duty horizontal interior applications only.

## SURFACE FINISHES

Aluminum surface laminate (brushed, cross-brushed, matte, satin, perforated, embossed and etched) has an epoxy coated aluminum surface and, depending on the design, is available in natural, goldtone, pewtertone, bronzetone and steeltone.

Polished aluminum surface laminate has an anodized aluminum surface available in natural and goldtone, in plain or embossed designs.

Copper surface laminate has a polyurethane, resin-coated true copper surface and, depending on the design, is available in plain, embossed, natural, patina and antique appearance.

Stainless steel surface laminate is real stainless steel surface available in a brushed design.

Brass surface laminate is real brass surface available in an embossed design.

## GRADES

### GRADE 82 (.030" (0.8MM))

#### Formica DecoMetal metal laminate:

Postformable aluminum sheets with a phenolic back. Engineered for vertical forming applications such as cabinet doors. **Not intended for countertop use in high-wear situations.** Formable to 3/8" (9.5mm) radius. (Full wrap doors can be made on 3/4" (19mm) cores.)

### GRADE 83 (.025" (0.7MM))

#### Formica DecoMetal solid metals and solid metal strips:

Solid aluminum sheet with an anodized finish in various designs. Etched finishes in various scales are coated in enhanced polymers. Engineered for vertical and light-duty horizontal interior applications.

### GRADE 84 (.030" (0.8MM))

#### Formica DecoMetal metal laminate:

Brushed stainless steel sheet or corrugated aluminum with a phenolic back. The phenolic back prevents creasing and allows for improved adhesion to substrates. Engineered for vertical and light-duty horizontal applications.

### GRADE 85 (.040" (1.0MM))

#### Formica DecoMetal metal laminate:

Polished, anodized, matte, brushed or mirror aluminum or copper sheet with a phenolic back. The phenolic back prevents creasing and allows for improved adhesion to substrates. Engineered for vertical and light-duty horizontal interior applications.

### GRADE 86 (.050" (1.3MM))

#### Formica DecoMetal metal laminate:

Matte, mirror, hammered or antiqued aluminum or copper sheet with a phenolic back. The phenolic back prevents creasing and allows for improved adhesion to substrates. Engineered for vertical and light-duty horizontal interior applications.

## FABRICATION AND ASSEMBLY/HANDLING

### USAGE LIMITATIONS

Formica DecoMetal products are intended for application to dry interior vertical or light-duty horizontal surfaces. They are not recommended for application directly to plaster, gypsum board, concrete, or softwood fir and pine plywoods. They should not be used in areas exposed to water, excessive moisture, constant high humidity, temperatures exceeding 140°F (60°C) for prolonged periods of time, or for exterior applications. Formica DecoMetal products are manufactured using real aluminum, brass, stainless steel and copper foils. This surface is softer than the surface for Formica® Brand Laminate and will scratch more easily. These products are not recommended for heavy-duty horizontal applications such as countertops or for use in high heat or moist areas such as backsplashes, behind cooktops or range hoods.

Postforming grade laminates are available in limited patterns. Consult the *Formica DecoMetal® Catalog of Standard Items* (Form No. 08-104). Do not heat postform standard grade metal laminates (Grade 84, 85 & 86) or solid metals (Grade 83). Solid metals are cold postformable.

The surface of the laminate is covered with a protective peelcoat, which should not be removed before all work has been completed. Directional patterns have an arrow on the peelcoat indicating proper direction for application.

Damage, scratches or wear to the surface of the colored aluminum patterns will reveal silver natural aluminum. Mirror finishes may show some small dimples and, in certain lighting conditions, may display slight color changes. Mirror finish metal laminates should be viewed under lighting conditions specific to the application prior to fabrication, by peeling back a portion of the peelcoat for visual inspection.

Before routing, inspect the router base and bit guide bearings and check on a piece of scrap material to make sure that you will not scratch the surface.

Do not apply adhesive tape to the surface, as it can damage the finish. Masking tape may be applied over the peelcoat for additional protection for the router base and router bit bearing to guide on.

## DECOMETAL® BY FORMICA GROUP TECHNICAL DATA CONTINUED



### COLOR LIMITATIONS

Due to deviations that are inherent to natural metal products, Formica DecoMetal products may display a range of color shades, which do not indicate a product defect. Check that all sheets are of a consistent shading before fabrication. Lift a corner of the peelcoat to check shading; reposition peelcoat after color check to protect the surface during fabrication.

**Formica DecoMetal metal laminate and solid metals are directional and may show a color shift when viewed at different angles. It is absolutely necessary that the running direction is the same, and the general appearance checked, before assembly. Arrows are printed on the peelcoat of items that have a directional pattern, indicating alignment direction. Do not remove the peelcoat prior to fabrication.**

Exposure of Formica DecoMetal sheets to direct sunlight may produce color change in the tinted surface coating. Any slight change in color over time does not indicate a product defect. Do not expose solid metal sheets to temperatures that exceed 200°F (93°C) or to direct sunlight.

Occasionally, interference colors (Newton rings) can occur on polished, anodized aluminum surfaces. Check all polished aluminum laminates under the relevant lighting conditions before fabrication by lifting a corner of the peelcoat; reposition the peelcoat after checking to protect the surface during fabrication.

### STORAGE

Formica DecoMetal sheets should be stored horizontally, face side down, with a caul board placed on top to protect the material from possible damage and reduce the chance of warpage. The material should never be stored in a high moisture area, or in contact with the floor or an outside wall. Storage temperature should not exceed 86°F (30°C) or go below 50°F (10°C) for prolonged periods of time.

Optimum conditions for storage are approximately 70°F (21°C), and 50% to 60% relative humidity. Do not damage the protective peelcoat. The material should be protected from ultraviolet light and excessive heat to ensure easy removal of peelcoat and prevent color shift due to exposure to light.

### PRECONDITIONING

Formica DecoMetal metal laminate moves with changes in humidity, but less than standard high pressure laminate. Formica DecoMetal laminate and substrates gain moisture and expand under high relative humidity conditions, and lose moisture and shrink under dry relative humidity conditions. Allow the sheet and the substrate to acclimate for at least 48 hours at the same ambient conditions prior to fabrication. Optimum conditions are approximately 70°F (21°C) and relative humidity of 50% to 60%. Provisions should be made for the circulation of air around the components.

**Solid metals (Grade 83) do not move dimensionally with changes in humidity. However, wood-based substrates to which metals may be bonded will move. Recommended cores for solid metals are hardwood-faced plywoods.**

### SUBSTRATES

The recommended cores for Formica DecoMetal metal laminates are 45# density, industrial grade particleboard (CS 236-66: Type 1, Grade B, Class 2) or Medium Density Fiberboard (MDF). MDF is recommended for mirror finishes to minimize telegraphing. Softwood fir and pine plywoods have rough surfaces and high shrinkage, and are unusable as substrates. All substrates should be sanded smooth, and should be clean and free of oil or grease, and uniform in thickness. Do not use drywall (gypsum), plaster, concrete, solid lumber, bending plywood or underlayment. Recommended cores for solid metals are hardwood-faced plywoods.

### POSTFORMING

Grade 82 is a special formula phenolic-backed metal laminate that can be heat postformed to radii as tight as 3/8" (9.5mm). The postforming process is similar to Formica Brand Laminate except the temperature is lower. 250°F (120°C) is the ideal temperature. Lower temperatures than 250°F (120°C) can cause cracking of the phenolic core, and higher temperatures can cause delamination and bubbling between aluminum foil surface and the phenolic core. Heater temperature, time of exposure to the heater, and the reflectance of the aluminum are some of the factors to consider. Since equipment can vary, it is recommended to test these conditions on a piece of scrap first using Tempilaq® temperature indicator.

### HEAT POSTFORMING

**Leave peelcoat on during postforming.**

1. Radius core materials.
2. Bond Grade 82 Formica Decometal to the core material with a neoprene contact cement that has been formulated for postforming.
3. Apply 250°F (120°C) temperature-sensitive paint (such as Tempilaq) to the back of the Formica DecoMetal sheet in an inconspicuous place in the area to be radiused. Note: Always apply the temperature-sensitive paint in the oversized or off-fall area, as the paint will telegraph through the face.
4. Leaving the peelcoat on the face, place the area to be formed over the heater, face down. Hold over heater until temperature-sensitive paint melts.
5. Remove from heat source. Quickly form into fixture using wiping action. When cool, remove from fixture and j-roll.

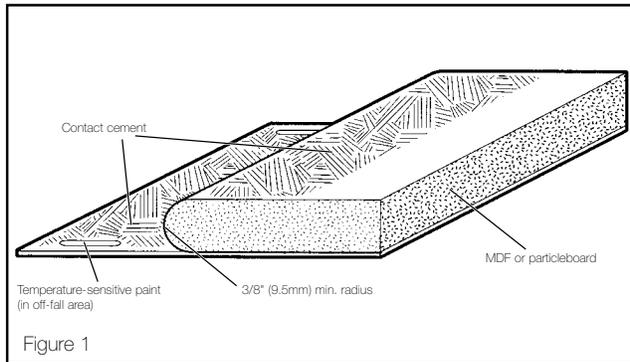


Figure 1

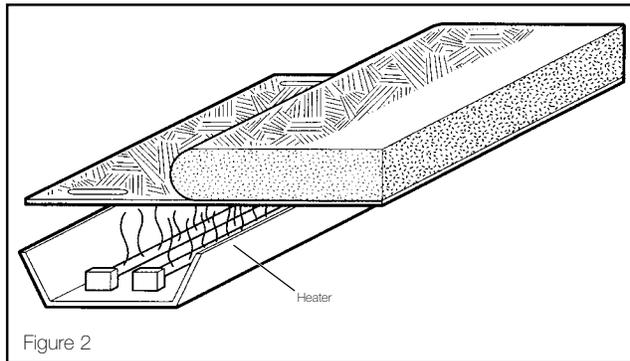


Figure 2

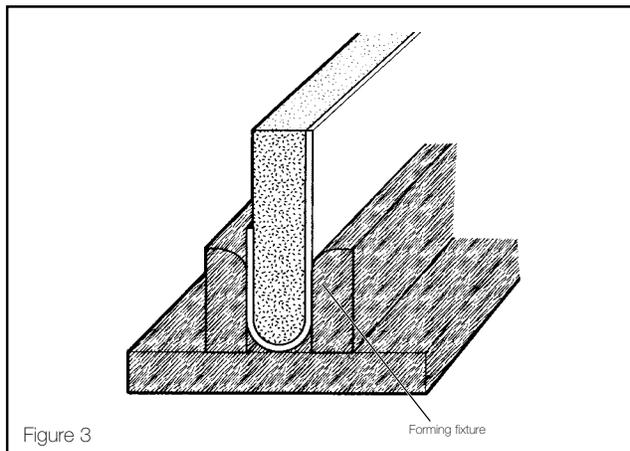


Figure 3

#### GRADE 83 COLD FORMING

Formica DecoMetal solid metals can be cold formed and bent using sheet metal fabrication techniques. Sheet metal brakes and pipe rollers can be used to shape the metal prior to bonding to substrates.

For 3/8" (9.5mm) radius, the above technique for Grade 82 can be used, skipping steps three and four (no heat required). Note: Very tight radii, less than 1/8" (3.1mm), can crack the anodized finish. Always test first.

#### ADHESIVES

Conventional contact, PVAc, and rigid-set adhesives (resorcinol) can be used to bond Formica DecoMetal laminate. Do not use urea adhesives. Do not hot press. Avoid contact adhesive contamination of the metal surface.

Formica® Brand Contact Adhesives should be used to bond solid metal sheets to the substrate.

**Do not allow contact adhesive solvent, lacquer thinner, or other strong solvents to come in contact with the urethane coated surface of Formica DecoMetal copper or brass laminates, as it will damage the surface.** Hexane, Heptane, Formica® Brand #203 Adhesive Remover or Citrus Cleaner can be used to remove contact adhesive overspray.

#### ASSEMBLY

Material, equipment and workmanship should conform to the industry standard practices, conditions, procedures and recommendations as specified by ANSI/NEMA LD3-2000, Section 4, Architectural Woodwork Quality Standards, DLPA (Decorative Laminate Products Association), and ANSI-161.2-1979 standards. Critical applications requiring a well-balanced panel assembly, such as cabinet doors, should use the same material on both sides to minimize warpage. Less critical assemblies may only require a cabinet liner or phenolic backer.

Formica DecoMetal metal laminate (except 2178 Brushed Stainless Steel) can be sawed, drilled, routed and fabricated similarly to standard high pressure laminate. Carbide-tipped cutting tools are recommended. Always cut with the decorative surface face up. (See Special Trimming and Cutting Guidelines that follow for stainless steel metal laminate and solid metals.)

Do not postform standard grade Formica DecoMetal laminate. Postforming grade is available as a factory order on select items.

**Always align material in the same running direction. Arrows are printed on the peelcoat of several items to indicate alignment direction. Do not remove the peelcoat prior to fabrication.**

All inside corners of cutouts must be radiused so they are as large as possible (1/8" (3.18mm) minimum to avoid stress cracking). The edges and corners should be filed smooth and free of chips or nicks.

Cut or milled edges should be finished with a fine file or abrasive paper to remove any burrs.

**CAUTION:** Formica DecoMetal metal laminate and solid metals conduct electricity. Contact with electrical current may cause shock hazards or short circuits. Sharp edges may cut electrical cords.

## DECOMETAL® BY FORMICA GROUP TECHNICAL DATA CONTINUED



### SPECIAL CUTTING AND TRIMMING GUIDELINES:

Formica DecoMetal Brushed Stainless Steel (2178) and solid metal items require different machining techniques than plastic laminate. Use the following guidelines when cutting and trimming these products:

#### CUTTING

- Cut stainless steel or solid metal to yield a minimum overhang (< 1/8" (3.18mm)).
- Use clean, sharp carbide saw blades.
- Eliminate pulling and bending by cutting solid metal with "zero clearance" at blade kerf or spot-gluing metal to scrap carrier board.

#### TRIMMING

- Use a small diameter cutter (3/8" (9.53mm)) and a variable speed router set at minimum setting, or use an electronic speed control accessory to reduce router RPM as much as possible.
- Use a clean, sharp flush bit (rather than a bevel bit) that can be adjusted to yield up to 10 fresh cutting edges. Protect the self-edge face with masking tape at the bearing line.
- Feed the router as fast as possible. Rough cut at one height adjustment and re-trim at fresh cutting edge. Retract cutter from the work piece as soon as cut is complete. Dwelling in one spot during start or finish will greatly diminish cutter life. Plan your cutting strategy to reduce static starts and stops.
- Stainless steel will dull the cutting edge quickly. Overextending a dull edge will result in excessive heat, which may cause delamination of the stainless steel surface from the phenolic core. Use Leitz #40776 for square trimming.
- Finish edges with a fine file, always cutting on the downward stroke.

**CAUTION:** Wear gloves. Metal burrs and edges are very sharp and can cut flesh and electrical cords.

Formica DecoMetal metal laminate can be formed at room temperature only. Do not use heat to form or for adhesive re-activation. Forming radii limits will vary, depending on laminate thickness and width.

**Do not heat postform Formica DecoMetal solid metals. Solid metals are cold formable.**

### TECHNICAL DATA

Performance compliance of Formica DecoMetal metal laminate and solid metal:

#### FORMICA DECOMETAL COLD BENDING RADII

Grade/Thickness	2" (50.8mm) Wide Samples		48" (121.9cm) Wide Samples	
	Outside Bend	Inside Bend	Outside Bend	Inside Bend
83 / .025" (0.7mm)	3/32" (2.4mm)	3/32" (2.4mm)	3/32" (2.4mm)	3/32" (2.4mm)
84 / .030" (0.8mm)	2" (50.8mm)	2" (50.8mm)	4" (101.6mm)	6" (152.4mm)
85 / .040" (1.0mm)	2-1/2"(63.5mm)	2-1/2"(63.5mm)	6" (152.4mm)	10" (254mm)
86 / .050" (1.3mm)	3" (76.2mm)	3" (76.2mm)	8" (203.2mm)	10" (254mm)

To achieve a square outside corner, use a miter fold technique, such as the Betterley™ Mitre Fold System.

#### FORMICA DECOMETAL® HEAT POSTFORMING BENDING RADII

Grade/Thickness	2" (50.8mm) Wide Samples		48" (121.9cm) Wide Samples	
	Outside Bend	Inside Bend	Outside Bend	Inside Bend
82 / .030" (0.8mm)	3/8" (9.5mm)	3/8" (9.5mm)	3/8" (9.5mm)	3/8" (9.5mm)

#### FIRE TEST DATA — ASTM E-1317 IMO TEST

Thickness	8599 Alum. .040" (1.0mm)	8699 Copper .050" (1.3mm)
Heat of Ignition (kJ/m <sup>2</sup> )	0.00	4,788.50
Heat of Sustained Burning (kJ/m <sup>2</sup> )	0.00	1,745.51
Time of Extinguishment (min)	N/A	3.54
Distance Burnt (mm)	N/A	250.00
Critical Flux (kW/m <sup>2</sup> )	N/A	34.93
Total Heat Release (kJ)	N/A	27.51
Peak Heat Release (kW)	N/A	0.29

# DECOMETAL® BY FORMICA GROUP

## TECHNICAL DATA CONTINUED



### FIRE TEST DATA – ASTM E-84 IMO TEST

(FACED MATERIAL)	ADHESIVE	SUBSTRATE	THICKNESS	BACKER	FLAME	SMOKE	CLASS
36/BasicMetal™	contact	PTB	3/4	91/BKL	<b>65</b>	<b>90</b>	<b>B</b>
36/BasicMetal™	unbonded				<b>40</b>	<b>25</b>	<b>B</b>
82/DecoMetal®	contact	PTB	3/4	91/BKL	<b>20</b>	<b>25</b>	<b>A</b>
83/DecoMetal® (Solid Metal)	contact	PTB	3/4	91/BKL	<b>0</b>	<b>110</b>	<b>A</b>
83/DecoMetal® (Solid Metal)	unbonded				<b>5</b>	<b>5</b>	<b>A</b>
84/DecoMetal®	contact	PTB	3/4	91/BKL	<b>10</b>	<b>0</b>	<b>A</b>
84/DecoMetal®	unbonded				<b>15</b>	<b>10</b>	<b>A</b>
85/DecoMetal®	contact	PTB	3/4	91/BKL	<b>5</b>	<b>0</b>	<b>A</b>
85/DecoMetal®	unbonded				<b>5</b>	<b>20</b>	<b>A</b>
86/DecoMetal®	contact	PTB	3/4	91/BKL	<b>15</b>	<b>10</b>	<b>A</b>
86/DecoMetal®	unbonded				<b>10</b>	<b>25</b>	<b>A</b>

### SHEET SIZES

Stainless Steel (2178)	40" x 96" (1020mm x 2440mm)
All others (pattern dependent)	48" x 96" (1220mm x 2440mm)
	48" x 120" (1220mm x 3050mm)
<b>SOLID METAL STRIP SIZES</b>	120" x 3/4" (3048mm x 19.05mm)
Brushed Aluminum (M605)	120" x 1" (3048mm x 25.4mm)
	120" x 1 1/2" (3048mm x 38.1mm)
	120" x 2" (3048mm x 50.8mm)
	120" x 3" (3048mm x 76.2mm)
	120" x 4" (3048mm x 101.6mm)
	120" x 6" (3048mm x 152.4mm)

### COLORS AND PATTERNS

Formica DecoMetal metal laminate and solid metal is available in a broad selection of designs and colors. Samples are available from Formica Corporation by calling 1-800-FORMICA™.

### HOW TO SPECIFY

Surface shall be Formica DecoMetal metal laminate or Formica DecoMetal solid metal from Formica Corporation, Cincinnati, Ohio.

COLOR NUMBER \_\_\_\_\_

COLOR NAME \_\_\_\_\_

GRADE \_\_\_\_\_

SIZE \_\_\_\_\_

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